

Water Conservation Landscape And Drought

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Overview

- Make Better Use of Water Outdoors
 - Examples Of Waste On Landscape
- Why Xeriscape?
 - Personal Experiences
 - Design For Drought
- Water Sources
 - Condensate
 - Grey water
 - Rainwater
- Notes:
 - Presentation Is Intended For Pubic Educational Purposes
 - Photographs May Be Used With Permission Of Author
 - Observations And Strategies Represent The Views Of The Author

Why Focus On Landscape?

“Forty percent of all municipal water use is outdoors and half of that is lost to runoff from the excessive watering of lawns (TWDB)”.



15 May 2012, After 2.56" Added To The Wettest May on Record

July 2011
1604 East and Stone Oak Parkway

Front View



Rear View



Average Texas Rainfall In 2011 Was 14.89"- The Driest Year On Record

August 2011
1604 West and Green Mountain Road



Broken Sprinkler Head **And** Overwatering
Water Running Into A Street Is Both Wasteful **And** Illegal

September 2011
Near Bergheim



Landscapes Can Be Inviting Even In Time of Drought

Xeriscape Means

- Respect The Local Conditions
 - Balance – Maximum of 30% Turf/30% Hardscape/30% Plants
 - Plan For Drought
 - Provide Water Only When Needed
 - Consider Competition From Deer
- Turf
 - Native Grass Such As Buffalo
- Hardscape
 - Native Stone and Timber
- Plants
 - Natives and Adapted Species
 - Adopt Organic Gardening Principles
- Key: Go Native

Hill Country Xeriscape Does Not Mean Zero Color



2007 Total Rainfall: 59 inches

But Each Year Is Different



2011 Total Rainfall: 16.98 Inches

Be Prepared For Drought

- Texas And Hill Country
 - Long Periods of Drought Interrupted By Short Periods of Floods
- Drought of Record
 - 1950-1957 (Boerne 1954: 10. 29")
 - Tree Ring Studies: Far Longer And Drier Periods
- Groundwater Pumping
 - Can Only Be Managed By Local Groundwater Conservation Districts
 - Develop and Implement Drought Contingency Plans—Drought Restrictions
- Cow Creek Groundwater Conservation District
 - Covers Nearly All of Kendall County
 - Drought Contingency Plan Can Implement Mandatory 40% Reduction In Pumping
 - Landscape Watering Allowed Once A Week With Hand Hose Or Bucket

Wet Conditions



Drought Conditions



Keep Plants Alive In Drought

- Alternative Water Sources
 - Condensate Recovery
 - Reuse Grey Water
 - Rainwater Capture
- No Restrictions On When Used
 - Water When You Need To

Water Storage

55 Gallon Food Grade Barrels

Source: Dave The Barrelman of San Antonio, <http://www.davethebarrelman.net/>



Condensate

Water From The Air Conditioner

Typical Summer Daily Production

8-10 Gallons



Reuse Grey Water

- **What Is Grey Water?**
 - Any Water Used In The Home, Except Water From Toilets, Is Called Grey Water
 - Dish, Shower, Sink, And Laundry Water Comprise 50-80% Of Residential “Waste” Water
 - May Be Reused For Other Purposes, Especially Landscape Irrigation

Typical Daily Recovery

Dishes: 5 Gallons
Shower: 10+ Gallons Per Person



Best Source: Washing Clothes



Avoid Using Harsh Detergents and Chlorine Bleach

Hose Connections

From Water Pump



From Rear Of Washer



Route Outlet Hose Outside



Water Pressure Sufficient To Use A Fifty Foot Hose

Use It Now



Save It For Later



One-Third Horsepower Sump Pump Moves Water From Storage

Tip: Add Fertilizer When Watering



Rainwater Harvesting

1" RAINFALL, 1,000 Sq Ft Roof, YIELDS 600 Gallons

- Average Annual Rainfall
 - 33.62 (1893-2012)
- Highest Annual Rainfall
 - 64.17 (1992)
- Lowest Annual Rainfall
 - 10.29 (1954)
- Consecutive Months Without Rain
 - 5 (1947)
 - Rarely More Than 30 Days

Basic Rainwater Capture



Improved Rainwater Capture



Basic/Improved Collection

- Shortfalls
 - Inefficient Capture
 - Insufficient Storage
 - Evaporation
 - Mosquitoes
- Better Way?
 - Increase Capture and Storage
 - Seal Water From Elements

200 Square Foot Roof



Install Gutters



Increase Storage



1,550 Gallon Storage Tank

Add Collector Pipe



Bury the Pipe



Gravity Feed To Storage



Sunlight **Does** Get Inside Tank

Problem: Algae Growth

Solution: Paint Exterior



Water For Your Hill Country Garden



Ready For Rain, Prepared For Drought



References

- Graywater Assessment, 2011: Final Report, Steven J. Graziano, Dr. Daniel H. Zitomer, P.E. (PI), Dr. Michael Switzenbaum (Co-PI), Dr. Vladimir Novotny, *Marquette University College of Engineering Department of Civil & Environmental Engineering*. Prepared for the: Milwaukee Industry/University Cooperative Research Center (I/UCRC) on Water Equipment and Policy.
- Texas Administrative Code." Title 30, Part 1, Chapters 210 and 285.
- Rainwater Harvesting Potential and Guidelines for Texas. 2006 Report to the 80th Legislature. T. R. H.E. Committee. Austin, TX, Texas Water Development Board.
- The 2005 Texas Manual on Rainwater Harvesting. Austin, TX, Texas Water Development Board.
- Oasis Design. Viewed at: <http://www.oasisdesign.net/greywater/laundry/>

Next Project:

More Storage



Questions?

